

U. S. DEPARTMENT OF COMMERCE

JESSE H. JONES, Secretary

NATIONAL BUREAU OF STANDARDS

LYMAN J. BRIGGS, Director

HOMOGENEOUS FIBER WALLBOARD

National Bureau of Standards

DEC 31 1943

Reference book not to be
taken from the Library.

COMMERCIAL STANDARD CS112-43

Effective Date for New Production from October 25, 1943



**A RECORDED VOLUNTARY STANDARD
OF THE TRADE**

UNITED STATES
GOVERNMENT PRINTING OFFICE
WASHINGTON : 1943

PROMULGATION
of
COMMERCIAL STANDARD CS112-43
for
HOMOGENEOUS FIBER WALLBOARD

On April 21, 1943, at the instance of the Insulation Board Institute, a proposed commercial standard for homogeneous fiber wallboard was submitted to manufacturers, testing laboratories, and distributor and consumer organizations for comment. An adjusted draft was then circulated to the trade for written acceptance. Those concerned have since accepted and approved the standard as shown herein for promulgation by the United States Department of Commerce, through the National Bureau of Standards.

The standard is effective for new production from October 25, 1943

Promulgation recommended.

I. J. FAIRCHILD,
Chief, Division of Trade Standards.

Promulgated.

Lyman J. Briggs,
Director, National Bureau of Standards.

Promulgation approved.

Jesse H. Jones,
Secretary of Commerce.

HOMOGENEOUS FIBER WALLBOARD

COMMERCIAL STANDARD CS112-43

PURPOSE

1. This standard is offered for the common understanding on homogeneous fiber wallboard. It establishes definite criteria of physical requirements that should be possessed by this material and presents a basis on which performance guarantees may be made by the manufacturer for the guidance and assurance of the prospective home owner, the architect, or builder.

SCOPE

2. This standard provides minimum specifications for one grade of homogeneous fiber wallboard of a nominal thickness of $\frac{5}{16}$ inch, 4 feet wide, and from 6 to 12 feet long. It covers physical requirements and tests for tensile and transverse strength, deflection, water absorption, and linear expansion, and sets forth the standard commercial sizes, tolerances, and methods of packing and labeling.

GENERAL REQUIREMENTS

3. *Composition*.—Boards shall be manufactured principally from wood, sugarcane, or other vegetable fiber, by a felting or molding process, suitable sizing material being incorporated in the product to render it water resistant.

4. *Destruction of rot-producing fungi*.—The material shall be subjected to such drying temperatures as to effect complete destruction of rot-producing fungi.

DETAIL REQUIREMENTS

5. *Surfaces*.—Surfaces shall be natural or other approved finish and shall be smooth and flat and shall be free from cracks and lumps, from coarse or hairy fibers and from excessive departure from planeness or other defects.

6. *Edge finish*.—Edges shall be square.

7. *Physical properties*.—Homogeneous fiber wallboard shall have the following properties when tested according to the methods hereinafter described.

Minimum transverse strength, each direction.....Pounds	a--	4
Deflection at ultimate load, not less than.....Inch	b--	0.40
Deflection under specified minimum transverse strength, not greater than.....Inches		1.50
Minimum tensile strength.....lb/in. ²		150
Maximum water absorption.....Percent		10
Maximum linear hygroexpansion.....Percent		0.5

^a This requirement is based on specimens $\frac{5}{16}$ inch thick. For specimens of other thicknesses, the requirement shall be changed in direct proportion.

^b This requirement is based on specimens $\frac{5}{16}$ inch thick. For specimens of other thicknesses, the requirement shall be changed in inverse proportion.

STANDARD SIZES AND TOLERANCES

8. *Standard commercial sizes:*

- 8a. Thickness.....The nominal thickness is $\frac{5}{16}$ inch.
 8b. Width.....The over-all width is 4 feet.
 8c. Length.....The over-all lengths are 6, 7, 8, 9, 10, and 12 feet.

9. *Tolerances.*—The following tolerances shall be permitted:

- Thickness.....plus or minus $\frac{1}{16}$ inch.
 Width.....plus 0, minus $\frac{1}{4}$ inch.
 Length.....plus 0, minus $\frac{1}{4}$ inch.

METHOD OF SAMPLING AND TESTING

10. *Sampling.*—Samples shall be taken at random so as to give a fair representation of the entire shipment. Pieces from five boards of any carload, or one-half of 1 percent of the number of pieces in less than carload shipments, but not less than three boards of any shipment shall constitute the test samples. From each a specimen 24 by 48 inches shall be cut, the larger dimension being crosswise of the longer dimension of the board, as it is usually obtained. When a shipment consists of more than one car or carrier load, samples shall be selected from each car or carrier.

11. *Tests.*

11a. *Atmospheric conditions.*—Tests for tensile strength, transverse breaking load, and deflection shall be made under prevailing atmospheric conditions, except in the case of dispute. These tests shall then be made on samples conditioned for at least 24 hours at a relative humidity of 65 percent and at a temperature of 70° to 75° F.

11b. *Transverse load.*—The transverse load shall be determined as follows: A specimen 3 inches wide and 18 inches long is taken for test. The transverse load is determined by placing the specimen on horizontal supports 12 inches apart and applying the load at midspan on a bearing parallel to the end supports, so that the head of the testing machine through which the load is applied moves at a rate of 12 inches, plus or minus 2 inches, per minute until the maximum load has been attained. The bearing and supports shall be rounded to a radius of approximately $\frac{3}{8}$ inch to prevent injury to the specimen. Three specimens from the long direction of the board and three at right angles thereto shall be tested. The transverse load in each direction is the average of three specimens taken from that direction.

11c. *Deflection test.*—Deflection shall be determined at the time each specimen is under the minimum specified transverse load and again at the time ultimate load is attained. The average of the deflections of three specimens from each direction shall meet both deflection requirements.

11d. *Tensile strength.*—The test for tensile strength shall be as follows: From each sample, specimens 2 inches wide and not less than 10 inches long shall be clean-cut parallel to the longest direction of the board and at right angles thereto. The distance between clamps shall be not less than 6 inches. Results on specimens under test that break within $\frac{1}{2}$ inch of the jaws shall be disregarded. The machine speed shall be set for the openings between the clamps at the rate of 2 inches per minute. The specimens before being placed in the testing machine shall be measured for width and thickness to the nearest

0.01 inch. The tensile strength in each principal direction shall be taken as the average of three specimens from that direction of the board.

11e. *Water absorption*.—A specimen 12 by 12 inches shall be dried at 160° F. for 24 hours and cooled to room temperature in a dry atmosphere. The thickness of the sample shall be measured and the volume calculated therefrom. The sample shall then be carefully weighed and submerged horizontally under 1 inch of distilled water maintained at a temperature of 70°, plus or minus 5° F. After 2 hours of submersion, the sample shall be stood on end to drain for 10 minutes, at the end of which time the excess surface water shall be removed by hand with a blotting paper or paper towel and the sample immediately weighed, the volume of absorbed water calculated, and the water absorption expressed in percent by volume based on the initial volume.

11f. *Linear hygroexpansion*.—The maximum linear hygroexpansion shall be determined in the following manner from a specimen 3 by 12 inches that has been cut parallel with the long dimension of the board and from a like specimen cut at right angles thereto. At each of two points approximately 10 inches apart on the center line of each specimen a small area is coated by rubbing with a glass-marking pencil (or a wax crayon). A fine cross mark is made with a razor blade on the center line in each of these two areas as reference points for the length measurements. The specimens are then conditioned for 24 hours at 50-percent relative humidity and a temperature of 70° to 90° F, and measurements are then made of the distance between the two reference points. A scale graduated in hundredths of an inch is used and readings are made with a magnifying lens to the nearest 0.005 inch. The specimens are next conditioned for 24 hours at 97-percent relative humidity and a temperature of 70° to 90° F, after which the distance between the two reference points is again measured. The measurements shall be made in the conditioned air specified in each case, or as quickly as possible after each specimen is removed therefrom. The linear expansion shall be reported as the increase in the length between reference marks as a percentage of the length at 50-percent relative humidity. (In the absence of other facilities, a convenient means of conditioning the specimens at the specified humidity conditions is to expose them in an enclosed space immediately above saturated solutions of suitable salts, such as sodium dichromate ($\text{Na}_2\text{Cr}_2\text{O}_7 \cdot 2\text{H}_2\text{O}$) for 50-percent relative humidity and potassium sulfate (K_2SO_4) for 97-percent relative humidity.)

PACKING AND LABELING

12. *Packing*.—Unless otherwise specified, the subject commodity shall be delivered in packages so constructed as to insure acceptance by common or other carriers for safe transportation at the lowest rate to the point of delivery.

13. *Marking*.—When specified, the shipping containers shall be marked with the name of the material, size, and quantity contained therein, as defined by the contract or order under which shipment is made, the name of the contractor, and the number of the contract or order.

14. *Labeling*.—In order to assure the purchaser that he is getting homogeneous fiber wallboard conforming to this commercial standard, it is recommended that producers either individually or in concert

with their trade association or testing laboratories, issue a guarantee label containing the following wording:

The manufacturer guarantees this homogeneous fiber wallboard to meet all requirements of Commercial Standard CS112-43, as issued by the National Bureau of Standards, United States Department of Commerce.

(Name of company.)

EFFECTIVE DATE

The standard is effective for new production from Oct. 25, 1943.

STANDING COMMITTEE

The following individuals comprise the membership of the standing committee, which is to review, prior to circulation for acceptance, revisions proposed to keep the standard abreast of progress. Each organization nominated its own representatives. Comment concerning the standard and suggestions for revision may be addressed to any member of the committee or to the Division of Trade Standards, National Bureau of Standards, which acts as secretary for the committee.

Manufacturers:

A. S. BULL (chairman), The Insulite Co., 500 Baker Arcade Bldg., Minneapolis 2, Minn.

PAUL D. CLOSE, Insulation Board Institute, 111 W. Washington St., Chicago 2, Ill.

ALAN E. HUGHES, U. S. Gypsum Co., 300 W. Adams Street, Chicago 6, Ill.

HERMAN W. STEIN, The Celotex Corp., 120 S. LaSalle Street, Chicago 3, Ill.

Distributors:

D. S. MONTGOMERY, Wisconsin Retail Lumbermens Association, 501 Milwaukee Gas Co. Bldg., Milwaukee 2, Wis.

R. S. KIRBY, Tucker-Kirby Co., Charlotte, N. C. Representing Carolina Lumber and Building Supply Association.

J. R. RANDALL, Reserve Supply Co., St. Paul, Minn. Representing Northwestern Lumbermens Association.

Users:

B. A. HOWES, Federal Public Housing Authority, National Housing Agency, 811 Longfellow Bldg., Connecticut and Rhode Island Ave., Washington 25, D. C.

E. W. MACY, Federal Housing Administration, Vermont Avenue and K Street NW., Washington 25, D. C.

BURT L. KNOWLES, The Associated General Contractors of America, Inc., Munsey Building, Washington 4, D. C.

S. B. GILLETTE, Oregon, State Board of Control, Salem, Oreg. Representing National Association of Purchasing Agents.

HISTORY OF PROJECT

On March 25, 1943, the Insulation Board Institute requested the cooperation of the National Bureau of Standards in the establishment of a commercial standard for homogeneous fiber wallboard. A draft of the proposed standard was submitted on April 21, 1943, to producers and to a number of testing laboratories and distributor and consumer organizations for their review and comment. After the requirements were harmonized and adjusted so that the draft represented the composite views of all interested groups, the recommended commercial standard was circulated on August 5, 1943, to those directly concerned for written acceptance.

Upon receipt of official acceptances estimated to represent a satisfactory majority of the production volume, and in the absence of active, valid opposition, the standard was promulgated on September 25, 1943, as Commercial Standard CS112-43.

ACCEPTANCE OF COMMERCIAL STANDARD

If acceptance has not previously been filed, this sheet properly filled in, signed, and returned will provide for the recording of your organization as an acceptor of this commercial standard.

Date

Division of Trade Standards,
National Bureau of Standards,
Washington, D. C.

Gentlemen:

Having considered the statements on the reverse side of this sheet, we accept the Commercial Standard CS112-43 as our standard of practice in the

Production ¹ Distribution ¹ Use ¹ Testing ¹

of homogeneous fiber wallboard.

We will assist in securing its general recognition and use, and will cooperate with the standing committee to effect revisions of the standard when necessary.

Signature of individual officer
(In ink)

(Kindly typewrite or print the following lines)

Name and title of above officer

Organization
(Fill in exactly as it should be listed)

Street address

City and State

¹ Please designate which group you represent by drawing lines through the other three. Please file separate acceptances for all subsidiary companies and affiliates which should be listed separately as acceptors in the case of related interests, trade papers, colleges, etc., desiring to record their general approval, the words "in principle" should be added after the signature.

TO THE ACCEPTOR

The following statements answer the usual questions arising in connection with the acceptance and its significance:

1. *Enforcement.*—Commercial standards are commodity specifications voluntarily established by mutual consent of those concerned. They present a common basis of understanding between the producer, distributor, and consumer and should not be confused with any plan of governmental regulation or control. The United States Department of Commerce has no regulatory power in the enforcement of their provisions, but since they represent the will of the interested groups as a whole, their provisions through usage soon become established as trade customs, and are made effective through incorporation into sales contracts by means of labels, invoices and the like.

2. *The acceptor's responsibility.*—The purpose of commercial standards is to establish for specific commodities, nationally recognized grades or consumer criteria and the benefits therefrom will be measurable in direct proportion to their general recognition and actual use. Instances will occur when it may be necessary to deviate from the standard and the signing of an acceptance does not preclude such departures; however, such signature indicates an intention to follow the commercial standard where practicable, in the production, distribution, or consumption of the article in question.

3. *The Department's responsibility.*—The major function performed by the Department of Commerce in the voluntary establishment of commercial standards on a Nation-wide basis is fourfold: first, to act as an unbiased coordinator to bring all interested parties together for the mutually satisfactory adjustment of trade standards; second, to supply such assistance and advice as past experience with similar programs may suggest; third, to canvass and record the extent of acceptance and adherence to the standard on the part of producers, distributors, and users; and fourth, after acceptance, to publish and promulgate the standard for the information and guidance of buyers and sellers of the commodity.

4. *Announcement and promulgation.*—When the standard has been endorsed by a satisfactory majority of production or consumption in the absence of active, valid opposition, the success of the project is announced. If, however, in the opinion of the standing committee or the Department of Commerce, the support of any standard is inadequate, the right is reserved to withhold promulgation and publication.

ACCEPTORS

The organizations and individuals listed below have accepted this specification as their standard of practice in the production, distribution, and use of homogeneous fiber wallboard. Such endorsement does not signify that they may not find it necessary to deviate from the standard, nor that producers so listed guarantee all of their products in this field to conform with the requirements of this standard. Therefore, specific evidence of conformity should be obtained where required.

ASSOCIATIONS

American Association of Engineers, Chicago, Ill.
American Specification Institute, Chicago, Ill.
Arizona Retail Lumber & Builders Supply Association, Inc., Phoenix, Ariz.
Associated General Contractors of America, Inc., The, Washington, D. C.
Carolina Lumber & Building Supply Association, Charlotte, N. C. (In principle.)
Heating & Piping Contractors District of Columbia Association, Inc., Washington, D. C. (In principle.)
Insulation Board Institute, Chicago, Ill.
Michigan Retail Lumber Dealers Association, Lansing, Mich.
Ohio Association of Retail Lumber Dealers, The, Xenia, Ohio.
Producers' Council, Inc., The, Washington, D. C. (In principle.)
Red Cedar Shingle Bureau, Seattle, Wash. (In principle.)
Southern California Retail Lumber Association, San Diego, Calif.
Wisconsin Retail Lumbermen's Association, Milwaukee, Wis.

FIRMS

Adams, Franklin O., Tampa, Fla.
Allen, George W., La Porte, Ind.
Allied Architects & Engineers of Indianapolis, Indianapolis, Ind.
Altfillisch, Charles, Decorah, Iowa.
American Houses, Inc., New York, N. Y.
American Sash & Door Co., Kansas City, Mo.
Andrews, Jones, Bisceco & Whitmore, Boston, Mass.
Angelina County Lumber Co., Keltys, Tex.
Antrim Lumber Co., St. Louis, Mo.
Armstrong Cork Co., Lancaster, Pa.
Arrington & Co., Inc., W. C., Norfolk, Va.
Asbestos & Asphalt Products Co., Inc., Fort Wayne, Ind.
Auler, Jensen & Brown, Oshkosh, Wis.
Baird Co., David, Camden, N. J.
Baldridge Lumber Co., J. C., Albuquerque, N. Mex.
Barnes Lumber Co., W. F. & J. F., Waco, Tex.
Behrend, Jacob, Philadelphia, Pa.
Bell Co., Inc., The David, Buffalo, N. Y.
Bell, Edo J., Chicago, Ill.
Berger, F. E., & R. L. Kelley, Champaign, Ill.
Berkshire Lumber Co., Pittsfield, Mass.
Beuttler, William, Sioux City, Iowa.
Bird & Bial, Union City, N. J.
Bird & Son, Inc., East Walpole, Mass.
Bishop, Horatio W., La Mesa, Calif.
Black & Shepard Co., Boston, Mass.
Blake, Edgar Ovet, Evanston, Ill.
Blithe, Wesley Leshner, Philadelphia, Pa.
Boehm, George A., New York, N. Y.
Bogner, Harry, Milwaukee, Wis.
Botsford Lumber Co., Winona, Minn.
Bovard, William R., Kansas City, Mo. (In principle.)
Bowser-Morner Testing Laboratories, Dayton, Ohio.
Brattin & Son, F. J., Shepherd, Mich.

Brazer, Clarence W., New York, N. Y.
Brust & Brust, Milwaukee, Wis.
Bucky, Fred W., Jr., Jacksonville, Fla.
Buechner & Orth, St. Paul, Minn. (In principle.)
Buffalo, City of, Department of Public Works, Division of Buildings, Buffalo, N. Y.
Builders Supply Co., Bismarek, N. Dak.
Building Service, Inc., Great Falls, Mont.
Building Supplies Corporation, Norfolk, Va.
California Builders Supply Co., Ltd., Oakland, Calif.
Cameron Lumber Co., Inc., Newburgh, N. Y.
Camlet, J. Thomas, Passaic, N. J.
Cannon & Mullen, Salt Lake City, Utah.
Carhart Lumber Co., Wayne, Nebr.
Cavalier Corporation, Chattanooga, Tenn.
Celotex Corporation, The, Chicago, Ill.
Central Insulation Co., The, Cleveland, Ohio.
Century Lumber Co., Des Moines, Iowa.
Century Lumber & Mill Co., San Diego, Calif.
Chapin, Rollin C., Minneapolis, Minn. (In principle.)
Chapin Lumber Co., The, Aurora, Colo.
Charlottesville Lumber Co., Inc., Charlottesville, Va.
Comfort Coal-Lumber Co., Hackensack, N. J.
Conrad & Cummings, Binghamton, N. Y.
Conwell & Co., E. L., Philadelphia, Pa.
Coolidge, Shepley, Bulfinch & Abbott, Boston, Mass.
Cowan & Cowan, Waterloo, Iowa.
Crowell & Lancaster, Bangor, Maine.
Crumb-Colton Co., Rockford, Ill.
Davis Lumber Co., Schenectady, N. Y.
De Jarnette, Charles W., Des Moines, Iowa.
Dearstine Lumber Co., J. C., Schenectady, N. Y.
Delehanty, Andrew L., Syracuse, N. Y.
Detroit Testing Laboratory, The, Detroit, Mich.
Dickey Associates, C. W., Honolulu, Hawaii.
Dierks Lumber & Coal Co. of Nebraska, Kansas City, Mo.
Dodds Lumber Co., Omaha, Nebr.
Economy Lumber Co., Inc., Christiansburg, Va.
Electrical Testing Laboratories, Inc., New York, N. Y.
Erdelen, Arthur F., St. Louis, Mo. (In principle.)
Everett & Associates, H. F., Allentown, Pa.
Fetzer & Fetzer, Salt Lake City, Utah.
Flannagan, Eric G., Henderson, N. C.
Flintkote Co., The, New York, N. Y.
Fort Wayne Builders Supply Co., Fort Wayne, Ind.
Froehling & Robertson, Inc., Richmond, Va.
Furer, William C., Honolulu, Hawaii. (In principle.)
Gair Co., Inc., Robert, New York, N. Y.
Gaibrath & Co., Seattle, Wash.
Garber, Frederick W., Cincinnati, Ohio.
General Millwork Corporation, Utica, N. Y.
Gibbs Lumber Co., Anaheim, Calif.
Giusti & Co., S. A., San Francisco, Calif.
Glore Lumber Co., C. A., Centralia, Ill.
Guernsey-Westbrook Co., The, Hartford, Conn.
Hallack & Howard Lumber Co., The, Denver, Colo.
Hannafor & Sons, Samuel, Cincinnati, Ohio.
Hansen Lumber Co., H. L., Galesburg, Ill.
Haralson & Mott, Fort Smith, Ark.

- Harrison Co., The W. H., Grand Island, Nebr.
Hartung Co., F. L., Seattle, Wash.
Hasness, Carlisle D., Harrisburg, Pa.
Hawaiian Cane Products, Ltd., San Francisco, Calif.
Hawkeye Lumber & Coal Co., Cedar Rapids, Iowa.
Haxby & Bissell, Minneapolis, Minn.
Heidritter Lumber Corporation, Elizabeth, N. J.
Heintz Manufacturing Co., Philadelphia, Pa.
Higgins, Charles H., New York, N. Y.
Higgins Lumber Co., Wilkinsburg, Pa.
Hines Lumber Co., Edward, Chicago, Ill.
Hoener, P. John, St. Louis, Mo.
Hoffman & Baldwin, West Chester, Pa.
Hoffmann Lumber Co., Pittsburgh, Pa.
Holsman & Holsman, Chicago, Ill.
Homestead Insulation Co., The, Hartford, Conn.
Hope, Frank L., Jr., San Diego, Calif.
Horley, Edward F., Pittsburgh, Pa.
Houkom, S. M., Fargo, N. Dak.
Huber-Lanctot Housewrecking Corporation, Buffalo, N. Y.
Illinois, State of, Division of Architecture & Engineering, Springfield, Ill., and Chicago, Ill.
Illinois, University of, Department of Architecture, Urbana, Ill. (In principle.)
Iowa Builders Supply Co., Cedar Rapids, Iowa.
Ivey, Inc., Edwin J., Seattle, Wash.
Johns-Manville Sales Corporation, New York, N. Y.
Kansas State College, Manhattan, Kans. (In principle.)
Keich & O'Brien, Warren, Ohio.
Kilham, Hopkins & Greeley, Boston, Mass.
Kohn, Robert D.-Chas. Butler, New York, N. Y.
Kyle, Herbert S., Charleston, W. Va. (In principle.)
Lambert Lumber Co., Leavenworth, Kans.
Larrick, Thomas, Athens, Ohio.
Latenser & Sons, John, Omaha, Nebr.
Law, Law & Potter, Madison, Wis.
Lee, W. H., Philadelphia, Pa.
Levine, Ernest, New Brunswick, N. J.
Levy, Will, St. Louis, Mo.
Loeb, Laurence M., Elmsford, N. Y.
Loizeaux Lumber Co., J. D., Plainfield, N. J.
Los Angeles, City of, Los Angeles, Calif.
Lovell-Denniston Lumber Co., Eldora, Iowa.
Lumber & Millwork Co., The, Philadelphia, Pa.
Lyman-Hawkins Lumber Co., The, Akron, Ohio.
Lynch & Ford, Wilmington, N. C.
Mackemer Lumber Co., R. G., Macomb, Ill.
Mahood, Alex B., Bluefield, W. Va.
Mann & Co., Hutchinson, Kans.
Markland Contracting Co., M. B., Atlantic City, N. J.
Marshall-Wright Lumber Co., Inc., Ionia, Mich.
Martin, Edgar, Architects & Engineers, Chicago, Ill.
Mason Lumber Co., Jacksonville, Fla.
Masonite Corporation, Chicago, Ill.
Matot, Inc., D. A., Chicago, Ill.
Mauran, Russell, Crowell & Mullgardt, St. Louis, Mo.
Merrill-Schaaf Lumber Co., Pierre, S. Dak.
Michigan Wholesalers, Inc., Ft. Wayne, Ind., and Jackson, Mich.
Mid-West Lumber Co., The, Mankato, Kans.
Midwest Lumber Co., Dubuque, Iowa.
Miller & Yeager, Terre Haute, Ind.
Minnesota & Ontario Paper Co., Insulate Division, Minneapolis, Minn.
Mock & Morrison, Tacoma, Wash.
Monroe Co., The, Colfax, Iowa.
Moore Dry Dock Co., Oakland, Calif.
Mooser, William, San Francisco, Calif.
Morgan, David H., Philadelphia, Pa.
Morrison-Merrill & Co., Salt Lake City, Utah.
Mueller, Hair & Hetterich, Architects & Engineers, Hamilton, Ohio.
Muhlenberg Bros., Reading, Pa.
Nassau Suffolk Lumber & Supply Corporation, Amityville, N. Y.
Nelson, Albert L., St. Louis, Mo.
Neumann & Sons, William, Jersey City, N. J.
North Bros., Atlanta, Ga.
O & N Lumber Co., Menomonie, Wis.
Officer, Gwynn, Berkeley, Calif.
Oldham & Worth Lumber Co., Raleigh, N. C.
Patzig Testing Laboratories, Des Moines, Iowa.
Pennsylvania State College, The, Department of Forestry, State College, Pa. (In principle.)
Pepper, George W., Jr., Philadelphia, Pa.
Percival Co., C. L., Boone, Iowa.
Perlin Lumber Co., Brooklyn, N. Y.
Pfaff & Smith Builders Supply Co., Charleston, W. Va.
Platt & Bro., F. P., New York, N. Y.
Plywoods Plastics Corporation, Hampton, S. C.
Resnikoff, Abraham, New York, N. Y.
Richardson-Phelps Lumber Co., Grinnell, Iowa.
Risser Lumber & Manufacturing Co., Art, Paris, Ill.
Ritchie & Associates, James H., Boston, Mass.
Robert & Co., Inc., Atlanta, Ga.
Ruberoid Co., The, New York, N. Y.
Santa Fe Lumber Co., San Francisco, Calif.
Schoeppe, Edward, Elkins Park, Pa.
Schroeder Sales Co., Houston, Tex.
Schulzke, William H., Moline, Ill.
Searle & Chapin Lumber Co., Lincoln, Nebr.
Shaver, Chas. W., Salina, Kans.
Simons Lumber Co., Henry, Minneapolis, Minn.
Snook-Veith Lumber Co., The, Cincinnati, Ohio.
Solie Lumber Co., Janesville, Wis.
Sones Lumber Co., El Centro, Calif.
Southwestern Insulation Co., Springfield, Mo.
Spahn & Rose Lumber Co., Dubuque, Iowa.
Specification Record, Chicago, Ill.
Standard Lumber Co., Spokane, Wash.
Staub & Rafter, Houston, Tex.
Stoetzel, Ralph E., Chicago, Ill.
Sweet's Catalog Service, New York, N. Y. (In principle.)
Taylor, Ellery K., Haddonfield, N. J.
Taylor, Edward Cray & Ellis Wing, Los Angeles, Calif.
Temple, Seth J. & Arthur, Davenport, Iowa.
Textor Lumber Co., Wilkinsburg, Pa.
Thorne, Henry Calder, Ithaca, N. Y.
Twin Oaks Builders Supply Co., Eugene, Ore.
United States Gypsum Co., Chicago, Ill.
United States Machinery Co., Inc., New York, N. Y.
United States Testing Co., Inc., Hoboken, N. J. (In principle.)
Vickere Lumber Co., T. W., Sheridan, Wyo.
Virginia Polytechnic Institute, Blacksburg, Va.
Von Tobel Lumber Co., Ed., Las Vegas, Nev.
Walsh, Louis A., Waterbury, Conn.
Warren & Bailey Co., Los Angeles, Calif.
Weaver, Rudolph, Gainesville, Fla.
Welch, Carroll E., Huntington, N. Y.
Wenner & Fink, Philadelphia, Pa.
West, Albert E., Boston, Mass.
Wholesale Building Supply, Inc., Oakland, Calif.
Wholesale Distributing Co., Pittsburgh, Pa.
Willatsen, Andrew, Seattle, Wash.
Willson, Fred F., Bozeman, Mont.
Wilson, Adrian, Los Angeles, Calif.
Wischmeyer, Wm. F., St. Louis, Mo.
Wood & Son Associates, Edw. J., Clarksburg, W. Va.
Wood Conversion Co., St. Paul, Minn.
Wood Lumber Co., Birmingham, Ala.
Woodbridge Lumber Co., Woodbridge, N. J.
Wright & Wright, Detroit, Mich. (In principle.)
Zimmerman, A. C., Pasadena, Calif.

U. S. GOVERNMENT

- Agriculture, U. S. Department of, Washington, D. C.
Federal Works Agency, Public Buildings Administration, Washington, D. C. (In principle.)
Interior, U. S. Department of, Office of Indian Affairs, Chicago, Ill.
Justice, U. S. Department of, Bureau of Prisons, Washington, D. C.
Veterans' Administration, Washington, D. C.
War Department, Washington, D. C.